

# BUTTERFLY WORLD<sup>®</sup>



*Official Guide*





THE WORLD'S LARGEST BUTTERFLY PARK!

NOW INCLUDING: HUMMINGBIRDS

AND LORIKEETS!

# Welcome to Butterfly World

## INTRODUCTION

Butterfly World is the first park of its kind in the Western Hemisphere and the largest butterfly park in the World. Many years of research, combined with careful planning and control have created the right conditions for thousands of butterflies to fly, court, feed and bask in the sunlight, as you walk among them, and enter their world! Because most of these butterflies are bred at Butterfly World you will also be able to witness their entire life cycle and marvel at unusual caterpillars and pupae.

Plants are essential for the survival of butterflies. Our expert horticultural department propagates thousands of specialized plants to feed caterpillars and countless flowering specimens to provide nectar for adult butterflies. This guide has been designed to help you enjoy your visit, and learn more about the exciting things that are happening at Butterfly World. To enhance your enjoyment and educational experience, we invite you to check the boxes ☒ next to the butterflies, birds and plants you encounter while you are exploring the grounds. Have a wonderful time!

## SOME FACTS ABOUT BUTTERFLY WORLD

### How long does a butterfly live?

The average life span of a butterfly in the aviary is about fourteen days. This compares to about seven days in the wild. However, some species like the Zebra can live for up to ten months, and species which vary their nectar diet to include such things as rotting fruit, pollen, dung and even carrion, can live even longer.

### How many butterflies are in the aviary?

We try to keep a minimum of 3000 butterflies on display. However, there are often far more. Because we are located in South Florida, this number remains unaffected by seasonal changes.

### How many species are there to see?

At any time, up to fifty species can be seen, and over 150 different species over the course of one year.

### What are the differences between a butterfly and a moth?

Butterflies and moths are very similar. However, basic differences exist. These are:

- Butterflies generally rest with their wings folded, above the body, perpendicular to the ground. Moths usually rest with their wings folded along their body.
- Most butterflies have antennae which are clubbed at the end, whereas the antennae of a moth are pointed or feathered.

- Butterflies are solar-powered day flying creatures. Although some moths are also daytime flyers, the majority fly at night.
- Butterfly caterpillars are extremely fussy about which plant they feed on. Moth caterpillars will generally eat a variety of plants.

### Pupa, Chrysalis or Cocoon?

The words pupa and chrysalis have the same meaning; "pupa" has its origins in Latin while "chrysalis" is a Greek word. A cocoon is the silk casing a silk moth caterpillar spins before it turns into a pupa or chrysalis.

### What do butterflies do in the winter?

Most of the butterflies at Butterfly World are tropical species, and in our nearly tropical environment, never have to cope with winter. Non-tropical butterflies have to spend several months of the year in "hibernation" at different stages of their life cycle depending on their species.

ButterflyWorld  
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#### CREDITS

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Graphics and Printed: European Graphics  
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## The Story of Butterfly World



Ronald Boender

observing and recording data on the many behaviors of each species.

Finding that there was a real need for farmed butterflies for sale to universities and zoos, Boender established MetaScience Co. in 1984. Having only a laboratory and a single aviary, the staff at MetaScience produced up to 1000 pupa per week, and established methods of butterfly rearing that are still in use at Butterfly World.

During this time, Boender also learned of attractions called "butterfly houses" springing up across the world, particularly in the United Kingdom.

In 1985, he traveled to England to investigate this phenomenon and its possibilities. Upon meeting Clive Farrell, originator of the "butterfly house" concept, and founder and owner of the London Butterfly House, Boender already knew what his goal would be. He would build a butterfly house in America.

Boender and Farrell entered into a partnership and began working on plans for the first butterfly house in the United States, however the design was a challenge because the park would have to incorporate many features. It would be a public attraction first and foremost, but it was Boender's hope that it would also be a center for research and education, and that it would include the living butterfly farm he had worked years to perfect.

Having met these original goals, Boender's dream was finally realized on March 28, 1988, when Butterfly World opened its doors for the first time.

In the years that have followed, the park has expanded to include the country's largest free-flight hummingbird aviary, a lorikeet encounter, and along with them, a skilled aviculture care and research staff to support these endeavors.

The Passiflora Society International has been established to support further research and the sharing of information amongst those, worldwide, who share Boender's love of these plants, the food source for many butterflies. A North American "Bring Back the Butterflies" campaign has also been successfully implemented at Butterfly World, resulting in thousands of enthusiasts across the continent receiving free butterfly gardening information for their home region.

Boender has also been vigilant in his support of off-site research, using Butterfly World profits and expertise to create the Boender Endangered Species Laboratory at the University of Florida. Working in conjunction with scientists there, Butterfly World has been instrumental in saving the endangered Schaus Swallowtail, a species of butterfly that is becoming reestablished in South Florida, and that may even be taken off the endangered species list in the near future.

The story of Butterfly World is the story of a dream realized, and how one man's dream, when pursued, can effect his community and even the world, in a wonderful way. We invite you to dream, and to enjoy your visit to Butterfly World.



Clive Farrell



# Butterfly Identification Guide

The following pages will help you identify some of the butterflies in the main flight areas. How many of these can you find?



*Vindula erota*  
The Cruiser



*Morpho peleides*  
The Blue Morpho



*Hebomoia glaucippe*  
Great Orange Tip



*Dryadula phaetusa*  
The Dryadula



*Cethosia biblis*  
The Lacewing



*Hypolimnias bolina*  
Great Egg Fly



*Mechanitis polymnia*  
Mechanitis



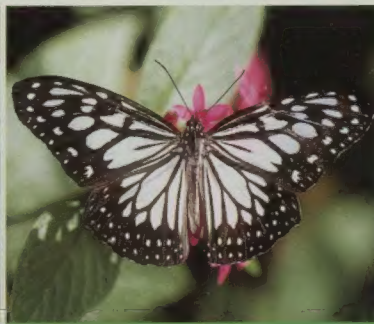
*Hamadryas februa*  
Grey Cracker



*Biblis hyperia*  
The Red Rim



*Vindula erota*  
The Cruiser



*Ideopsis juvena*  
Small Wood Nymph



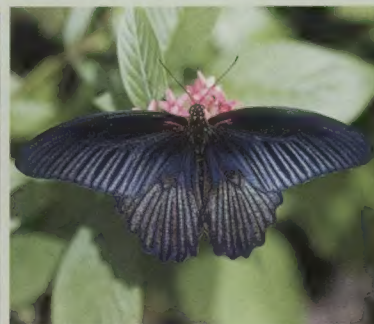
*Anartia fatima*  
The Fatima



*Papilio demoleus*  
Lime Butterfly



*Chilasa clytia*  
Common Mime



*Papilio memnon*  
Great Morman



*Siproeta epaphus*  
Rusty Tipped Page

# Butterfly Identification Guide



*Caligo eurilochus*  
Owl



*Anartia amathea*  
The Coolie



*Athyma perius*  
Common Sargeant



*Parthenos sylvia*  
Clipper



*Euploea mulciber*  
Stripe Blue Crow



*Graphium agamemnon*  
Tailed Jay



*Precis atlites*  
Grey Pansy



*Heliconius melpomene*  
Cythera



*Morpho helenor*  
Banded Morpho



*Danaus vulgaris*  
Blue Glassy Wing



*Precis almana*  
Peacock Pansy



*Papilio palinurus*  
Emerald Swallowtail



*Myscelia cyaniris*  
Myscelia



*Catonephele mexicana*  
Catonephele



*Parthenos sylvia*  
Clipper



*Danaus chrysippus*  
Plain Tiger



# Butterfly Identification Guide



*Heliconius melpomene*  
☐ Piano Key



*Heliconius melpomene*  
☐ Piano Key



*Heliconius melpomene*  
☐ Piano Key



*Heliconius chlysonymus*  
☐ Chloysonymus



*Heliconius melpomene*  
☐ Piano Key



*Heliconius melpomene*  
☐ Piano Key



*Heliconius melpomene*  
☐ Piano Key



*Heliconius cydno*  
☐ Cydno



*Heliconius erato*  
☐ Cyrbia



*Heliconius cydno*  
☐ Cydno



*Heliconius numata*  
☐ Numata



*Heliconius sara*  
☐ Sara



*Heliconius ethilla*  
☐ Ethilla



*Heliconius atthis*  
☐ Atthis



*Heliconius Melpomene*  
☐ Madiera

# Butterfly Identification Guide



*Doleschalia bisaltide*  
☐ Autumn Leaf



*Parides iphidamas*  
☐ Iphidamas



*Parides photinus*  
☐ Cattleheart



*Pachliopta aristolochiae*  
☐ Common Rose



*Papilio thoas*  
☐ Thoas



*Idea leuconoe*  
☐ Tree Nymph



*Anteos clorinde*  
☐ White Angeled Sulphur



*Heliconius melpomene*  
☐ Rosina



*Siproeta stelenes*  
☐ Malachite



*Tithorea harmonia*  
☐ The Tiger



*Heliconius hecale*  
☐ Hecale



*Lexias dirtea*  
☐ Archduke

## Moths

Shown are some of the unusual moth species also displayed in our aviaries at various times through the year.



*Actius luna* moth  
☐



*Attacus atlas* moth  
☐



*Composia* moth  
☐



# The Life Cycle of the Butterfly

## COURTSHIP AND MATING

Courtship rituals are widely varied amongst butterflies and may include such behaviors as dancing, showering the intended with pheromones, or even spiral flight patterns. When mating occurs, it may take just a few minutes or may last as long as 48 hours.



☐ *Mechenitis* pairing in the forest

## EGG LAYING (OVIPOSITION)

Because caterpillars are very fussy about what they will eat (most will only eat one or two species of plant), the female butterfly must have the skills of an expert botanist in order to find the plants upon which to lay her eggs. Thankfully, she is naturally equipped for this, identifying the correct plant by "smelling" it, using sensors on her feet and antennae. She then deposits her eggs - usually on the underside of a leaf - to protect them from direct sunlight and rain.



☐ *Battus polydamas* laying eggs

## EGGS

After a few days to a week, the eggs change color - becoming darker. Just before hatching, the head of the caterpillar becomes visible. After chewing a hole in the eggshell and climbing out, the young caterpillar then eats the eggshell, which is full of important nutrients.

## CATERPILLARS (LARVAE)

From the very start, caterpillars are eating machines, wasting little time before starting on the leaves of their food plant. They generally eat the new growth when very young, as this contains far less plant toxins than the older growth, which they will eat when they are larger. As they grow, they must shed their skin several times. The new skin



☐ *Papilio cresphontes* larva

is often a different color and pattern. Each of these changes denotes the beginning of a new "instar". Most species will have 5 or 6 instars before reaching full size. When fully grown, the caterpillar will often wander several yards before finding a place to pupate. It first spins a small silk pad to which it attaches its tail, and from which it suspends itself. Hanging upside down, it sheds its last caterpillar skin and becomes a pupa.

## PUPAE

The pupal stage is the most vulnerable point in the life cycle. Hence, most pupae are well camouflaged. Inside, amazing physiological changes take place as the lowly caterpillar is transformed into a beautiful butterfly.

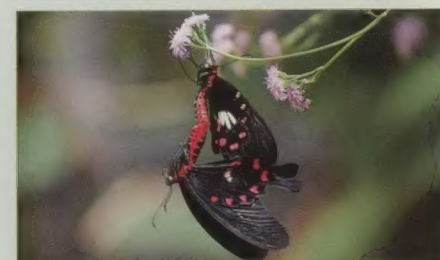


☐ Pupae

Pupae come in all shapes, colors and sizes. Shown above are unusual pupae from many different countries.

## ADULTS

During emergence, the pupa case bursts and the adult butterfly quickly crawls out. At first, the wings are very wrinkled and tiny, but within just a few minutes they inflate as the butterfly vigorously pumps blood through the veins. An enzyme is then released which causes the fluid in the wings to harden. After about 30 minutes, the butterfly is ready to take its first flight, and the miracle of metamorphosis is complete.



☐ *Pachliopta aristolochiae* Common Rose

# Butterfly Gardening



*Agraulis vanillae*  
Gulf Fritillary

☐ Food Plant: Passionvine



*Danaus plexippus*  
Monarch

☐ Food Plant: Milkweed



*Heliconius charithonia*  
Zebra

☐ Food Plant: Passionvine suberosa or "Incense"

Butterfly Gardening is fast becoming a nationwide, if not worldwide trend. It is a fun, educational activity that can have wonderful benefits both for the gardener and the environment. It is also very easy. If the right plants are planted, the butterflies **will** find the garden. What could be better?

Pictured are native butterflies of the South Florida region. These butterflies can be seen flying throughout Butterfly World's Grace Gardens and can be easily attracted to your garden as well.



*Danaus gilippus*  
Queen

☐ Food Plant: Milkweed

The best way to get started is to plant the **caterpillar food plants** upon which adult butterflies lay their eggs. Caterpillar food plants run the gamut from vines to trees and shrubs, and when planted together

can make for a breathtakingly beautiful and diverse habitat garden. Attracted to these plants by smell, female butterflies will be able to locate your home, male butterflies will be able to locate female butterflies in a similar fashion, and before you know it the miracle of metamorphosis and the wonder of butterflies will exist in your own backyard.

Because butterfly and plant species differ greatly by region, Butterfly World has established a North American "Bring Back the Butterflies Campaign", providing

free printed plant guides for each geographic region within the continent. Although Butterfly World stocks all of the plants for the South Florida region, a local County Agricultural agent should be able to tell you



*Dryas julia*  
Julia

☐ Food Plant: Passionvine suberosa or holosericea



*Papilio cresphonte*  
Giant Swallowtail

☐ Food Plant: Citrus or Wild Lime



*Battus polydamas*  
Gold Rim Swallowtail

☐ Food Plant: Dutchman's Pipe



## Butterfly Gardening



*Phoebis philea*  
Orange-Barred Sulphur  
☐ Food Plant: Cassias



*Anartia jatrophaea*  
White Peacock  
☐ Food Plant: Bacopa



*Phoebis sennae*  
Cloudless Sulphur  
☐ Food Plant: Cassias

## Remember, caterpillar food plants are the key!

where to find the correct plants in other areas.

Once the caterpillar food plants have been selected, blossoming nectar plants can be added to make a butterfly garden more beautiful and should be included for adult butterfly feeding. However, it is the caterpillar food plants that are truly the key to a thriving butterfly garden. Again, once these are in place, it is a good idea to add some beautiful blossoming plants that provide good nectar food, such as Zinnias, Buddlea, Salvia, Pentas and Porterweed.



*Marpesia petreus*  
Ruddy Daggerwing  
☐ Food Plant: Ficus

For those who would like more information and instruction, Butterfly World offers monthly classes on Butterfly Gardening.

Different classes are offered for both beginning gardeners and those with gardening experience. Sign up today!

To receive a free North American "Bring Back the Butterflies Campaign" plant guide for your region, simply request one at our customer service counter today, send a self addressed, stamped envelope to the address printed in

this book, or log on to [ButterflyWorld.com](http://ButterflyWorld.com) and "Join the Campaign."



*Leptotes cassius*  
Cassius Blue  
☐ Food Plant: Plumbago



*Eumaeus atala*  
Atala  
☐ Food Plant: Coontie



*Danaus eresimus*  
Soldier  
☐ Food Plant: White Vine

## Butterfly Gardening



*Buddleia davidii*  
Butterfly Bush  
☐



*Tithonia*  
Mexican Sunflower  
☐



*Odontonema strictum*  
Firespike  
☐



*Cuphea melvilla*  
Candy Corn  
☐



*Calliandra haematocephala*  
Powder Puff  
☐



*Clerodendrum paniculatum*  
Pagoda Flower  
☐



*Stachytarpheta*  
species  
Porterweeds  
☐



*Psiguria tabacensis*  
☐



*Cnidocolum aconitifolius*  
White Coral Plant  
☐



*Heliotropium 'alba'*  
☐



*Jatropha gossypifolia*  
☐



*Hamelia patens*  
Fire Bush  
☐



*Jatropha integrerrima*  
☐

Although some butterflies have a more varied diet, most butterflies feed on nectar from flowers. Shown are some of the more popular nectar flowers recommended by Butterfly World.



*Pseudogynoxys chenopodioides*  
Mexican Flame Vine  
☐



*Clerodendrum speciosissimum*  
Java Glory Bower  
☐

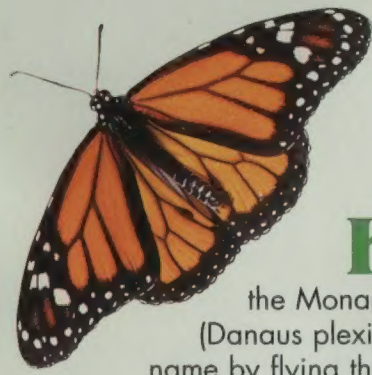


*Russelia sarmentosa*  
☐



*Pentas lanceolata*  
☐





# The Miracle of the Monarch Migration

**K**nown as the "wanderer", the Monarch butterfly (*Danaus plexippus*) earns its name by flying the span of North America during its incredible fall migration. For unknown reasons, millions of Monarchs flock to the same southwestern locations year after year, where the mild climate, forests and mountains offer refuge.

Although most Monarchs have a lifespan of about 6 weeks, the fifth or "winter generation" has a unique longevity, surviving for up to six months on the body fats they are able to store. The Monarchs remain in Mexico until March 21st, when they begin the return migration. They court and mate during the travel home, and produce offspring. In fact, most of the butterflies completing the flight back to the Northern climates are actually the progeny of the parents that left Mexico.



Each year in the fall, the Monarch butterflies across the entire eastern half of North America migrate to their overwintering colonies in the mountains of Michoacan, Mexico. Here, they accumulate in incredible numbers (sometimes hundreds of millions in ten to fifteen acres of forest), hanging dormant on the fir trees except for an hour or two of flight at mid-day from November to March.

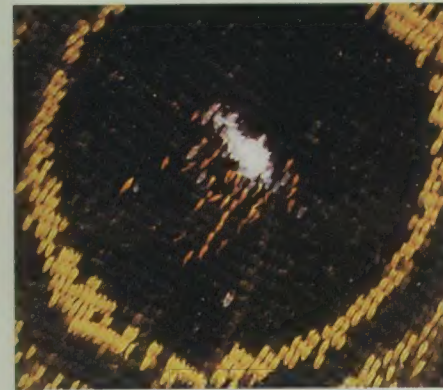


Densely packed on every available square inch of fir bough, the Monarchs occasionally break the tree branches from their massed weight, causing them to crash to the forest floor.

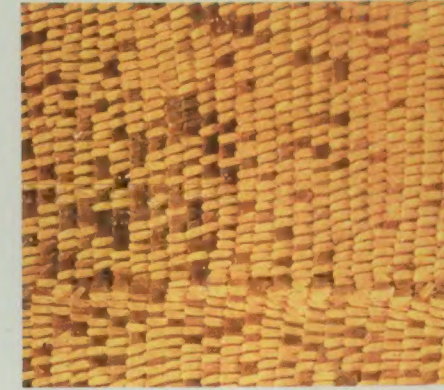


Monarchs that fall to the forest floor attempt to climb the nearest vegetation or other object, spreading their wings in the morning sunlight to warm up sufficiently for walking or flying.

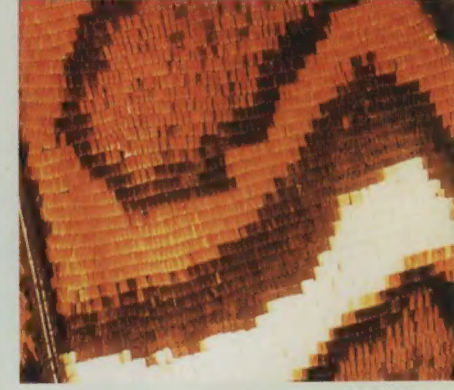
# Where Do the Colors In Butterfly Wings Come From?



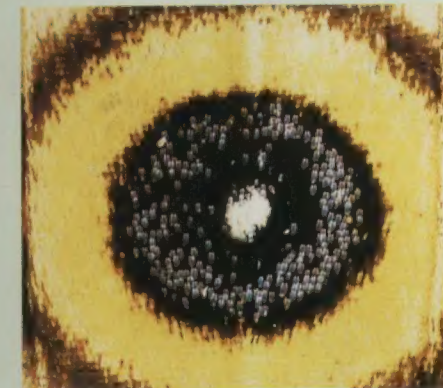
*Morpho patrochilus*



*Morpho hebuca obidonus*



*Morpho hecuba obidonus*

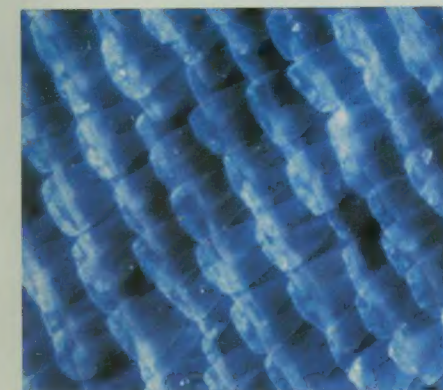


*Taenaris artemis*

The color patterns of butterfly wings are made up of thousands of tiny overlapping scales. Colors are produced in two ways, through chemical pigment within each scale, or through light hitting the surface of the scale itself.

Scales with chemical pigments absorb certain wavelengths of light and transmit what is left, giving most butterflies their beautiful color patterns.

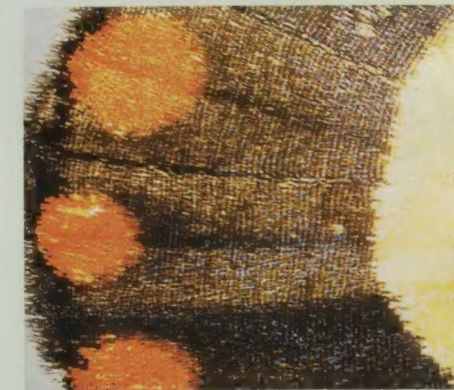
The most brilliant colors however, are produced by scales shaped to allow light to bounce off minute films and ridges in the scale surface. This type of scale can produce a breathtaking flash of color or an iridescent effect as the butterfly spreads its wings to fly. One thing is for sure, magnified under the power of a good light microscope, each wing is truly a work of art!



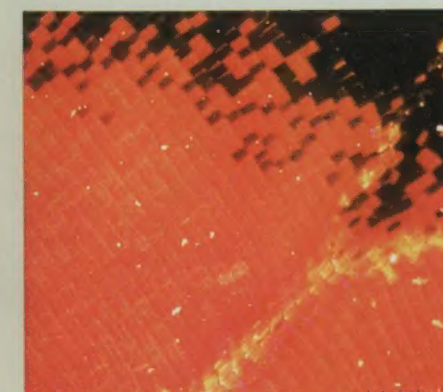
*Morpho patrochilus*



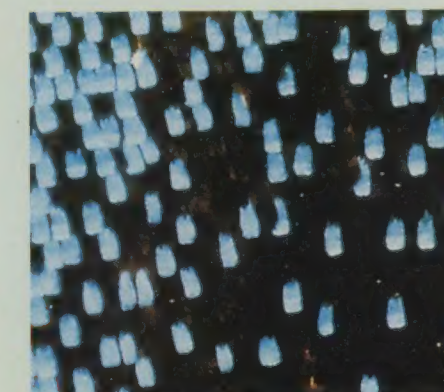
*Graphium weiskei*



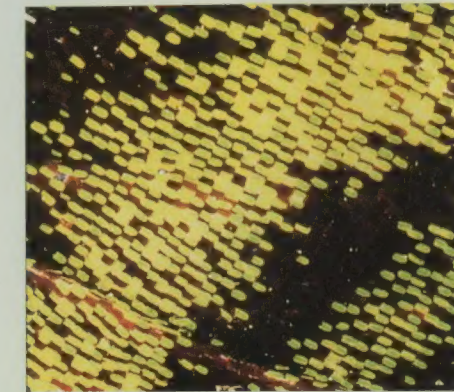
*Delias sagessa*



*Callicore astarte staudingeri*



*Papilio blumei*



*Teinopalpus imperialis*



# The Birds of Butterfly World

## The Lorikeets and Lories of the "Lorikeet Encounter"

Lories and Lorikeets are the breathtakingly beautiful clowns of the parrot world. They are also called the "brush-tongued" parrots, for their long brush-like tongues allows them to easily feed on pollen and nectar, a physical feature that sets them apart from other species.

Extremely intelligent and precocious, they learn at an amazing rate, and seem to add to their repertoire of tricks and mischief-making on a daily basis. They are also very friendly and enjoy interacting with humans.

Found in the Australasian region, and in particular, the country of New Guinea, the greatest numbers of Lories and Lorikeets can be seen on Henderson Island and the Pitcairn Ducie Islands, where they were originally discovered.

In the wild, they feed upon the nectar of flower covered trees, as well as fruit, some seeds that have not yet ripened, insects, and larvae. They are arboreal birds, feeding, sleeping, breeding and even making their nests in the hollows of tall trees.



The Lorikeets

## Hummingbirds and more within the "Jewels of the Sky™ Aviary"

The smallest birds in the world, Hummingbirds may also be the most fascinating. With wings beating 60 times a second, they possess the unique ability to hover, as well as fly in any direction, reaching an average speed of 45 miles per hour in the air. In proportion to their overall size, they have both the largest brain and heart of any animal, and an amazing heart rate of between 500 and 1200 beats per minute.

Found only in North, Central, and South America, there are 330 known species of Hummingbirds, 24 of which have been verified within the U.S. In fact, it is estimated that every square yard of ground within the United States is inspected by at least one hummingbird annually. These busy birds visit 2000 to 5000 flowers per day, sipping nectar for energy, as well as feeding on tiny insects for muscle and feather building protein. They are also very territorial, and seem to relish a fight with any bird bold enough to partake of the food sources they have claimed as their own.



*Amazilia amazilia*  
Amazilia emerald hummingbird



*Cyanthus latirostris*  
Broadbill hummingbird (male)



*Cyanthus latirostris*  
Broadbill hummingbird (female)



*Cyanthus latirostris*  
Broadbill hummingbird on eggs



*Rhodopsis vesper*  
Oasis hummingbird (male)



*Thaumastura cora*  
Peruvian sheartail hummingbird



*Colibri coruscans*  
Sparkling violet ear hummingbird (male)



Sparkling violet ear feeding babies

## Other Showstoppers . . .

Other show stoppers within the Jewels of the Sky Aviary include Gouldian Finches, brilliantly colored Honeycreepers and Euphonias.

Although native to Australia, Gouldian Finches have been raised in this country since 1954. They are rainbow colored wonders with feather patterns that appear to be "painted" on to them. They are also seed feeders, often seen sharing a meal with other members of their family.

Unlike these, Honeycreepers relish nectar, and use their long curved beaks to pierce the backs of flowers to obtain it. Although they are members of the Tanager family, they are often mistaken for Hummingbirds, due to this aspect of their anatomy.

A Euphonia is a different sight altogether, with navy blue feathers covering its back and tail, in sharp contrast to its mustard yellow breast. These birds love to sing, and have the endearing distinction of remaining in family groups long after the young have left the nest. Families can often be seen flying throughout the aviaries with both father and mother sharing feeding duties until their young reach adulthood.



*Calypte costae*  
Costa hummingbird



*Violaceous euphonia*  
Violet euphonia (male)



*Cyanarpes caeruleus*  
Yellow legged honeycreeper (male)



*Cyanarpes cyaneus*  
Red legged honeycreeper (male)



*Chloebeia gouldiae*  
Gouldian Finch



*Violaceous euphonia*  
Violet Euphonia (female)



*Cyanarpes caeruleus*  
Yellow legged honeycreeper (female)



*Cyanarpes cyaneus*  
Red legged honeycreeper (female)



# Grace Gardens

## Flowering Tropical Botanical Gardens

Butterfly World's Grace Gardens showcase some of the most beautiful flowering tropical specimens in the world. They include vines, shrubs, and trees, as well as water gardens. They are named in honor of the wife of our founder.



*Tobouchina granulosa*  
☐ Purple Spray



*Thunbergia mysorensis*  
☐



*Nepenthe*  
☐ Water Lilies



*Mussaenda frondosa*  
☐



*Brugmansia x insignis*  
☐ Angel's Trumpet



*Cassia alata*  
☐ Candle Bush



*Buddleia madagascariensis*  
☐



*Mussaenda sp.*  
☐ Tropic Snow



*Erythrina variegata*  
☐ Sunshine Tree



*Podranea ricasoliana*  
☐ St. John's Creeper



*Bauhinia galpinii*  
☐



*Brunfelsia pauciflora*  
☐ Yesterday, Today & Tomorrow



*Tithonia diversifolia*  
☐ African Sunflower



*Chorisia speciosa*  
 Silk Floss Tree  
☐



*Thunbergia grandiflora*  
 Sky Vine  
☐



*Clerodendrum thomsoniae delectum*  
☐



*Bulnesia arborea*  
☐



*Thevetia peruviana*  
 Lucky Nut  
☐



*Cassia afrofistula*  
☐



*Tecomante venusta*  
 New Guinea Trumpet Vine  
☐



*Pontederia cordata*  
 Pikeral Weeds  
☐



*Mansoa alliacea*  
☐ Garlic Vine



*Antigonon leptopus*  
☐ Coral Vine



*Tabebuia chrysotricha*  
☐



*Clerodendrum thomsoniae*  
☐ Bleeding Heart



*Tecoma stans*  
☐ Yellow Bells



*Rosacea*  
☐ Roses



*Callistemon Sp.*  
☐ Bottlebrush Tree



*Bougainvillea*  
☐



*Platycerium bifurcatum*  
☐ Staghorn Fern



# Passifloras

## The Lifeline of the Heliconius Butterflies



☐ *Passiflora*  
*"Atropurpurea"*



☐ *Passiflora*  
*"Lavender Lady"*



☐ *Passiflora*  
*"Lady Margaret"*

Covered with breathtaking blossoms, the Passiflora serves as the caterpillar food source for some of the world's most beautiful butterflies, including the Melpomene, Sara and Rosina. As a result of this tie between these plants and the butterflies, Butterfly World has amassed one of the largest collections of flowering passion vines in the world.

Butterfly World is also the headquarters for the Passiflora Society International, an organization founded by Ron Boender and dedicated to the preservation of Passifloras throughout the world, and designed to foster research and the sharing of information amongst all members. Further information and applications for the Passiflora Society International are always available at Butterfly World or by e-mail sent to: [gardens@butterflyworld.com](mailto:gardens@butterflyworld.com).



☐ *Passiflora*  
*boenderi*



☐ *Passiflora*  
*vitifolia*



☐ *Passiflora*  
*trialata*



☐ *Passiflora*  
*"Pura Vida"*



☐ *Passiflora*  
*"Blue Bouquet"*



☐ *Passiflora*  
*holosericea*



☐ *Passiflora*  
*"Marie"*

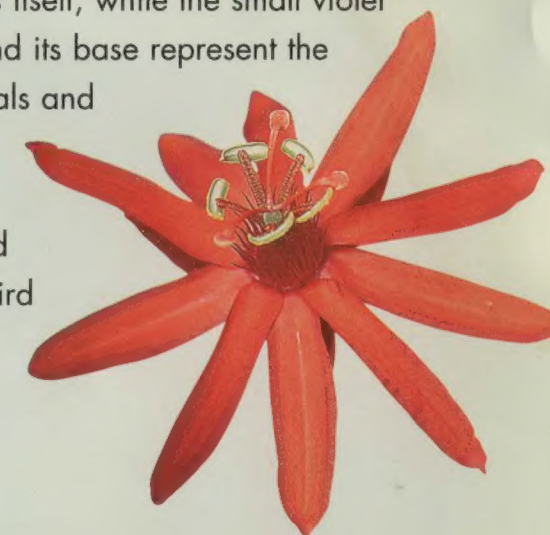
## The Legend of the Passiflora.....

Early Spanish and Portuguese missionaries believed each part of the Passiflora represented a different aspect of the passion of Jesus Christ, hence the name "passion vine".

The stigma are thought to represent the three nails used to nail Christ to the cross. The center column of the flower is thought to represent the cross itself, while the small violet colored filaments that surround its base represent the crown of thorns. The five petals and five sepals are thought to represent the 10 disciples present at the crucifixion, and Christ's resurrection on the third day is represented by the three underleaves.



☐ *Passiflora*  
*"Incense"*



☐ *Passiflora* "Piresii"



# Research and Discovery at Butterfly World

Throughout Butterfly World's history, research into every aspect of the butterfly and its habitat has been ongoing, yielding a myriad of discoveries and facilitating new methods of butterfly farming and protection.

## Butterfly Farming

Butterfly World began farming native and exotic species of butterflies in 1983. Because commercial farming had never been attempted in the United States, trial and error were common practice. However, methods were fine-tuned quickly enough to allow the successful farming of over 50 species within two years.

The successful farming of all of these butterflies also necessitated the successful propagation of their individual food plants. Voracious eaters, butterfly larva are also very fussy about what they will

consume, making it necessary for the study of butterflies to become one of botany as well.

The discovery and identification of food plants for several rare butterflies has been the goal and often a triumph for Butterfly World throughout the years.

Although we know much about butterfly species and their basic dietary needs, we are constantly learning about their more complex chemical and environmental requirements.

Some of the specific areas of study in this realm have included the identification of chemicals butterflies emit and consume that are necessary for reproduction, the shade, temperature and humidity requirements of different species, and the study of species' diverse diapause (hibernation) stages.



*Boender Endangered Species Laboratory*



# Research and Discovery at Butterfly World

## Pest Control

The aviaries within Butterfly World provide a desirable habitat for many kinds of wildlife. Consequently, they attract many unwanted pests, the worst of these being those that prey on butterflies and birds. Controlling these pests in creative ways without destroying the healthy environment within the aviaries is, of course, a daily challenge.

Butterfly World enlists the use of structural and biological controls in order to protect the butterflies from their lengthy list of predators, including ants, spiders, snakes, frogs, lizards and wasps. Because butterflies are also susceptible to bacteria and even viruses, the butterfly breeding areas must be maintained at a high level of cleanliness.



*Cuban tree frog  
hiding in pipe*

## Endangered Species

Throughout its history, Butterfly World has been actively involved in efforts to learn more about and save America's threatened and endangered species of butterflies. Through the park's North American "Bring Back the Butterflies Campaign" for butterfly gardening, butterfly habitat creation and protection have been advanced across the continent.

On a state level, Butterfly World has enjoyed a partnership with scientists at the University of Florida, supporting and aiding in their investigations of butterfly population losses. Our combined efforts have culminated in the creation of the "Boender Endangered Species Laboratory", named for Butterfly World's Founder, and located on the campus of the University of Florida.

Through an extensive study at the University of Florida, aided by Butterfly World's breeders, it was proven that mosquito control chemicals were the main factor causing the near demise of the endangered Schaus Swallowtail in the Florida Keys.

Over the past several years, Butterfly World and students at the University of Florida, under the direction of Dr. Thomas C. Emmel, have been involved in a cooperative effort to save this butterfly. Each year at the same time, lab reared chrysalises are transported from the University of Florida. The adult butterflies emerge at Butterfly World, and are then introduced back into their original breeding areas in Dade and Monroe Counties.

This repopulation has been so successful that there is hope the Schaus Swallowtail will soon be removed from the Endangered Species List.



*Schaus Swallowtail*



# Museums

The Museum Insectarium at Butterfly World displays a few hundred of the nearly countless insects of the world. We provide this display so that you can get a "close up" view of creatures you would probably never have the opportunity to see in nature. While our museum is fun, and certainly educational, most major natural history museums that include such collections as ours, also house serious research endeavors that are important to mankind.

## Why are large museum collections so important?

These collections are first, used for reference. For example, insect collections are integral to pest identification. They are also used for systematics and taxonomy, i.e. putting newly discovered creatures within the right order of family, genus and species, as well as for research within higher education. Mimicry in insects is also so astounding that there are sometimes hundreds that appear identical to the untrained eye. In these cases, examination of specimens in their entirety is crucial. Still others are so small in size that they can only be seen or identified through the use of a microscope.

In collections such as the one at the British Museum of Natural History, many of the specimens were donated centuries ago and may have become extinct by our time, making their preservation all the more important, and their value, priceless.

The Florida State Collection of Arthropods is one of the 10 best arthropod museums in North America. the FSCA contains over 8 million specimens of arthropods (insects, spiders, ticks, mites, and others) and gastropods (snails) collected from all over the world.

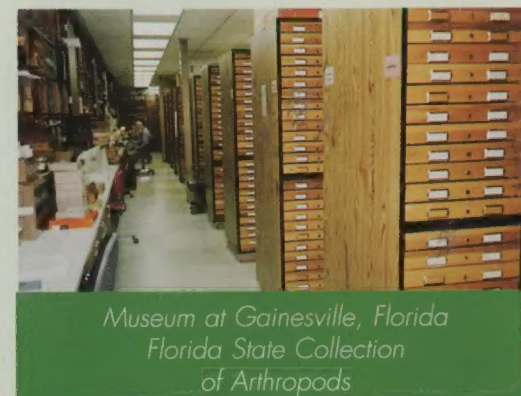
The Florida Department of Agriculture and Consumer Services is constantly on the alert for exotic pests that threaten Florida's agricultural and native plant resources. With its many reference specimens, the FSCA is a valuable tool that assists our taxonomists in identifying arthropod samples. The FSCA is used to train our plant protection specialists and others to help eradicate and prevent the spread of pests.

FSCA is open to tours by school classes and individuals. Please feel free to contact us and request information on receiving a tour.

Florida State of Collection of Arthropods  
Florida Department of Agriculture & Consumer Services  
PO Box 147100  
Gainesville, FL 32614  
Tele: 352/372-3505  
FAX: 352/334-0737  
email: thomasm@doacs.state.fl.us



Phillip Ackery, entomologist at the famed British Natural History Museum, showing Ron Boender some of the collection



Museum at Gainesville, Florida  
Florida State Collection  
of Arthropods



The Museum/Insectarium at  
Butterfly World



The Museum/Insectarium at  
Butterfly World



Museum at Gainesville, Florida  
Florida State Collection  
of Arthropods

# Butterfly World As An Educational Resource

One of the main goals of Butterfly World is to encourage visitors to take an active interest in their environment and the natural world. Toward this end, we have implemented a number of ways in which people of all ages can use Butterfly World as an educational resource.

## FOR CHILDREN:

### Field Trip Tours

Butterfly World has created a complete school field trip program for all grade levels including pre-visit activities, reduced field trip rates and a guided tour. Boy Scouts, Girl Scouts and camps are welcome!

## FOR ALL AGES:

### Guided Group Tours

Guided tours for all ages are available by reservation and parties of 10 or more may be eligible for group rates. For further information regarding field trips, group tours and rates, please call our Group Sales Desk at 954-977-4434.

## WORKSHOPS AND SEMINARS

In addition to tours, Butterfly World offers a series of how-to workshops and seminars throughout the year. Highlighted are our Butterfly Gardening classes for beginners and advanced butterfly enthusiasts. If you would like information on future programs, simply call 954-977-4434, write to: Butterfly World, 3600 W. Sample Road, Coconut Creek, FL 33073, or send e-mail to [gardens@butterflyworld.com](mailto:gardens@butterflyworld.com).



## SOCIETIES

Butterfly World is proud to be a member of The Lepidopterists' Society, and the Association for Tropical Lepidoptera, both of which are non-profit organizations dedicated to the study and preservation of butterflies and moths. Both amateur and professional butterfly enthusiasts are encouraged to join. Information pamphlets and membership applications can be picked up any time at the Butterfly World Admissions Desk. Information and membership applications for the Passiflora Society International are also readily available at the Admissions Desk. This society, headquartered at Butterfly World, was founded to foster communication and sharing amongst those who share interest in Passiflora, plants that are necessary for the survival of many rainforest butterflies, as well as North American butterflies.

## MUSEUM STORE

Finally, the Butterfly World Museum Store is always open to the public and filled with hard-to-find butterfly and nature related books and gifts. Our on-line store is also easily accessible at [butterflyworld.com](http://butterflyworld.com).

Just outside, the Butterfly Gardening Plant Shop carries a wide variety of butterfly attracting plants and vines guaranteed to turn your garden into a paradise for butterflies. Our knowledgeable staff will be happy to help you select the best items for your needs or answer any questions you may have.

## Butterfly World Scientific Advisory Board

Dr. Phillip J. DeVries, University of Oregon  
Dr. Thomas C. Emmel, University of Florida  
Dr. Lawrence E. Gilbert, University of Texas  
Dr. Nancy Greig, Cockrell Center, Houston, Texas  
Dr. John Heppner, Florida State Collection of Arthropods, FDACS.  
Dr. John M. MacDougal, Missouri Botanical Gardens  
Dr. Jackie Miller, Allen Museum, Sarasota Florida  
Dr. James L. Nation, University of Florida  
Dr. Phil Schappert, University of Texas  
Hon. Miriam Rothschild C.B.E., F.R.S., England



# BUTTERFLY WORLD



Entrance

Grand Plaza  
Admissions & Concert Hall

Gift Shop

Café

Plant Shop

Museum

Lorikeet Encounter  
Aviary

Gazebo

Café

Wings of the World  
Aviary

Secret Garden

Grace Gardens

Tinalandia Suspension Bridge

Jewels of the Sky  
Avian

Paradise Adventure  
Aviary

Butterfly Farm

Research

Laboratory

Tropical Rain Forest

Emerging  
Area

Nursery